

INSTRUCTION MANUAL

Mephisto[®]
academy

Hegener + Glaser AG

MEPHISTO ACADEMY

Dear Chess Friend!

Congratulations on the purchase of your MEPHISTO academy chess-computer!!

We would like to welcome you to the growing club of owners of MEPHISTO chess-computers and hope that you will have many hours of entertainment with your new partner. Your MEPHISTO academy is a high-quality product, manufactured in Germany. It is simple to use and yet offers a large number of features, which make the MEPHISTO academy an ideal tournament and training partner for everyone interested in chess.

As you now have a lot of features at your disposal, we have written this instruction manual in a way to make it possible to learn how to use them in the shortest possible time. The manual is divided into sections containing the most important information for normal games at the beginning and has references to other sections later in the book with more details.

We recommend that you read the entire manual at least once so that you know what your MEPHISTO is capable of. After you have played with the computer a little you can then start to read about the special functions, which you will want to use in time.

We would like to wish you hours of fun and exciting chess with your MEPHISTO academy!

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Before you start to read the rest of the manual we suggest that you first check the contents of the box to make sure that everything is there. Besides this manual the box should contain the following:

- Your MEPHISTO academy
- The academy program module
- One set each of white and black chessmen
- An HGN5001 (or international equivalent) power supply
- A MEPHISTO academy book
- A guarantee card

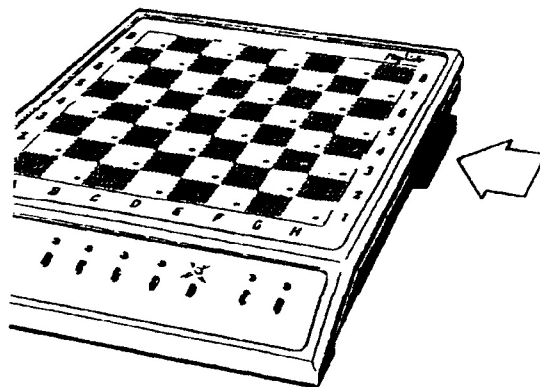
If anything should be missing please contact the retailer.

IMPORTANT:

The academy program module must be plugged into the computer's righthand side before the power supply is connected to the mains voltage.

Do this as follows:

- hold the program module face up (printing upwards) to the right of the MEPHISTO academy.
- push the module into the bay provided lightly, until it slots into place. When the module is correctly in place it should protrude by about 1.8cm, as shown below:



1. GENERAL NOTES

Despite its large number of special features, your MEPHISTO is simple to use due to the structured design of its program.

You can make all the necessary settings and exploit a vast number of features with the use of only 8 keys. To make the whole affair even clearer there are 8 LED's (little lights) above the keys, which show which mode is presently activated.

It is the objective of this manual to help you operating the computer and to give you simple access to the special functions it contains.

1.1 PACKING, GUARANTEE

Please keep the original packing incase you have to return the computer for service.

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Make sure that the retailer has filled out the guarantee card properly, noting the type of computer bought as well as the date.

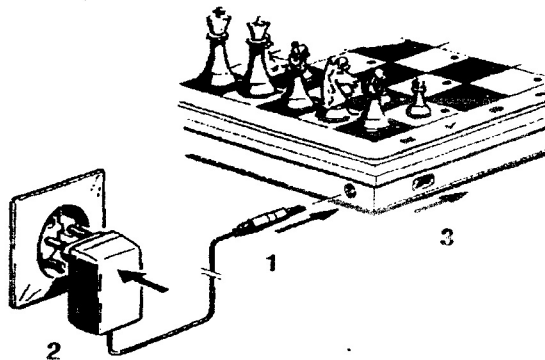
If your electronic sparring partner should ever need some servicing, then return it to the retailer, with a short description of the fault and (if valid) the guarantee card. If you should suspect a program error ('bug') then please contact the retailer **before** returning the machine. Often the bug will turn out to be the result of incorrectly operating the machine and expensive postal charges can then be avoided in advance.

1.2 LOOKING AFTER THE COMPUTER

Your MEPHISTO best appreciates being cleaned with a damp cloth. Chemical detergents, gasoline, methylated spirits etc. should be kept well away from MEPHISTO. Try not to leave the computer in the hot sun or near radiators for too long.

2. GETTING STARTED

First plug the jackplug of the power supply into the back of the computer. Then plug the power supply into the mains socket in the wall. Set up the chessmen on the board (White on the two rows, or ranks, closest to the keyboard, Black at the opposite end) and pull the switch (top lefthand side) ON towards you as shown in the diagram below.



The computer should light the LED (green) next to the White square on the keyboard, sound a friendly "I'm ready" beep tone and should write "MEPHISTO academy by Ed Schröder" in its display (also called the LCD display for 'Liquid Crystal Display').

Next take a look at the board. If any of the LED's (red) are flashing it means that the piece on that square is not properly centered. Move the piece to the centre of the square and the LED will switch off. Don't forget that a piece standing on top of the LED will inhibit you seeing it flashing! If MEPHISTO ever refuses to accept your first move, this is the first thing to check for.

After you switch MEPHISTO on, the computer is automatically set to play at the normal level of an **average** thinking time of 10 seconds per move.

The following chapter contains what you need to know so you can play against MEPHISTO without any problems. Chapter 4 contains the detailed information for special features access and can be ignored until you want to use them.

3. MAKING MOVES

3.1 STARTING A GAME

If you have just set up MEPHISTO as described in chapter 2, then MEPHISTO is ready to go and is waiting for your first move. The magnetic sensors under the board allow you to make moves by simply **lifting** a piece and then by **placing** it on the board.

If you push or slide a piece across the board MEPHISTO will either register a false move or refuse it as illegal. This is a small price to pay for the luxury of being able to avoid keying-in the co-ordinates of the two squares involved in a move as was necessary with 'pioneer days chess-computers'.

Back to making your first (brilliant) move. Let's assume you want to play E2E4. First lift up the white pawn on E2 (the LED of this square starts to flash) and then place it on E4 (LED there lights very briefly). Done that? As you can see, MEPHISTO didn't waste any time and immediately responded by beeping (announcing a move) and by showing its answering move on the board (flashing the LED's of the two squares involved in its own move). MEPHISTO also writes the move in the display to underline its point. The reply was quick because MEPHISTO knows a large number of standard openings (stored in a part of its memory appropriately called the 'Opening Book'), to which it refers at the beginning of a game (fiendishly clever these things aren't they?).

Back to that answering move. Lift up the piece on the square being flashed and place it on the other square being shown (LED switches off). The display changes back to the clock mode (more about that later) and it's your turn to move again - simple isn't it?!

As long as the computer can refer to its opening book (i.e. the moves are all chess theory and stored in the computer) the moves will be shown immediately and no time will be registered on the computer's clock (after all, it did find an answer in a split second).

If however you start with something wierd and wonderful such as H2H4, the computer will first have to consider whether you are mad or if this is some kind of mean trick or whether the move is simply not in its opening book. In this case the computer will leave the opening book and start to work, analysing the position and trying to find the best move.

If you played H2H4 the computer will not respond immediately, but flash the LED (green) next to Black (above the ENT key) as it is thinking, and will start counting time - as you can check in the display. When MEPHISTO find a reply it acts as described before. It also switches the LED for the opposite side (White in our case) on (look at the keyboard) to show whose turn it is next (after the computer's move has been carried out on the board).

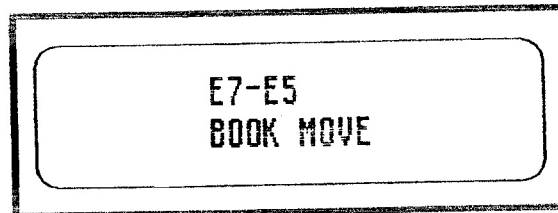
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- A WORD ABOUT OPENING BOOKS -

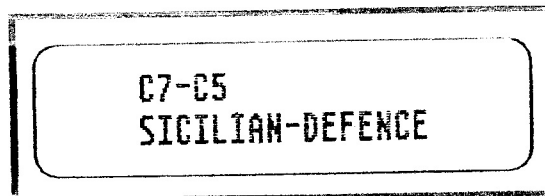
Way back in the early days of chess, players started to classify opening moves as either 'good' or 'bad'. As defences were developed to these, some opening lines - which were previously classed as 'good' - suddenly finished up on the 'bad' list. Books were written about these openings and these are now part of chess theory.

MEPHISTO checks the opening moves of a game against its own opening book and responds accordingly. Where several replies are possible a 'Random move generator' takes over and picks any one move. The advantages of this system are obvious; the computer doesn't waste time searching for standard answering moves, and it doesn't get them wrong (they are literally preprogrammed).

If you play E2E4 as your first move you will not only see the reply in the display but also the comment "BOOK MOVE" as shown below, unless MEPHISTO is playing a standard opening e.g. the Sicilian, in which case it will show this instead. This confirms that MEPHISTO knows the move and is playing from its opening book.



Your MEPHISTO is the only commercial chess-computer which will print the name of the opening in its display as soon as the type of opening has been recognized. You may find that you are playing theory openings you didn't know! For example after playing E2E4 the computer may show:



The opening book part of the computer will also recognize move transpositions (alterations in the move sequences which still lead to the same position). MEPHISTO may then leave its opening book for a short time and then return to this when it recognizes the transposition!

3.2 CAPTURING PIECES

To capture a piece first remove the piece you are capturing (LED of that square flashes) and replace it with your capturing piece (LED switches off). The same applies for the computer. First remove your piece where the LED is flashing (LED keeps flashing), then replace it with the capturing piece (LED switches off).

3.3 EN PASSANT

Contrary to the beliefs of many, this move **is** actually legal and is **not** a computer error (although it may be played when you least expected/wanted it!). To play an en passant move first make the Pawn's move (past the captured piece), then remove the captured Pawn (the LED flashes to remind you to do this). If you're not sure about the rules concerning en passant captures, please read the corresponding chapter in our book (MEPHISTO academy).

3.4 CASTLING

In accordance with the official rules of chess **the King must be moved first**. If you move the Rook first the computer must (and will) assume that this is a Rook's move. If you move correctly (King first) the computer will flash two LED's to show the correct second part of the castling move (Rook's move). The computer will only display the King's move when castling itself e.g. E1G1 or E8G8 etc.

3.5 PAWN PROMOTION

If the computer's Pawn reaches the opposite side of the board then it will show the piece into which the pawn has been promoted in the display (lower line). Check the table on page 19 for the symbols. Exchange the pawn (on the last rank) for this piece. If promoting yourself (Pawn on last rank), MEPHISTO will ask (in the display) what you want to promote to with "PROMOTE to ?". At the same time the LED's above the Knight, Bishop, Rook and Queen symbols on the keyboard will flash. Press the corresponding key and exchange the piece on the board.

3.6 ILLEGAL MOVES

Making Queens leap around corners to escape capture is something MEPHISTO will take offence at! If you try to make a move which isn't possible/legal then MEPHISTO will show "ILLEGAL MOVE" and sound a single 'wrong again...' protest tone. Whatever your immediate reaction may be when this happens (disgust, insulted feeling etc.) **assume the computer is right** and look at the position again. Sometimes there may be a nasty hidden check which you didn't notice! To carry on with the game simply put the piece back and play a legal move.

3.7 CHECK. CHECKMATE

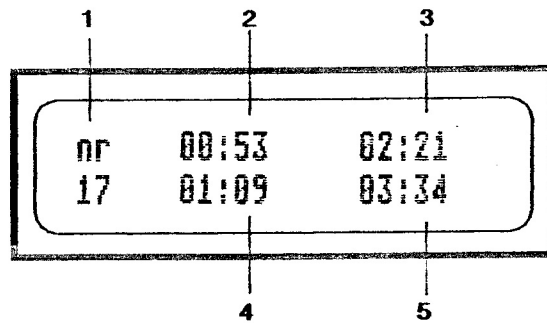
If the computer puts you in check then it will happily remind you of this by announcing it in the display (next to the move co-ordinates). If the move was the last i.e. fatal, then MEPHISTO will write "CHECKMATE" instead.

- THE INTERNAL CHESS CLOCKS -

Whenever it is your move or that of the computer and it is thinking, the display automatically shows you the clocks for each side and the move counter.

There are four internal clocks (two sides, each with the time of the present or last move and the total times elapsed). Check the following diagram to see what information is where.

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- 1) Move counter
- 2) Total time for MEPHISTO
hours/minutes
- 3) Time for MEPHISTO's move
minutes/seconds
- 4) Total time for player
hours/minutes
- 5) Time for player's move
minutes/seconds

3.8 MATE ANNOUNCAL

Causes some to be amazed at MEPHISTO's ability (and learn to respect it), whilst others may think about pulling the power supply from the wall! When MEPHISTO finds a line which inevitably leads to a checkmate it will announce this and show it in the display with e.g. "MATE in 4 MOVES". You may be happy to know that when the tables are turned MEPHISTO will dejectedly show "MATE in -4 MOVES" and will even let you go ahead and deliver the final blow (get that satisfaction!).

3.9. STALEMATE, DRAW.

If the computer can not play another move (stalemate) it will show "STALEMATE" instead of a move.

Draws are announced in the lower line of the display, also quoting the reason for the draw as follows:

- | | |
|----------------------------------|-------------------|
| - not enough pieces left to win: | "DRAW - MATERIAL" |
| - position repeated 3 times | "REPETITION -3" |
| - 50 moves rule: | "DRAW 50 MOVES" |

3.10 GIVING UP

Try not to. When the computer gives up (or **wants to**) it will show "I RESIGN" in the lower line of the display (below the move being made). You can then either accept or go ahead and press CL to continue the game to a (probably gory) end. MEPHISTO will only offer you this once, so if you insist on thrashing it; it will fight on to the bitter end (in digital defiance).

3.11 NEW GAME

To finish the present game or start again press the ENT and CL keys together. MEPHISTO sounds a double tone and shows "MEPHISTO academy by Ed SCHRÖDER" again. Set the pieces up and you are ready to go.

This point marks the end of the 'essentials' section of the manual. The following chapters show you all the finesse of your machine and let you know how to get it to really improve your game rather than just play against it.

4. OPERATION GUIDE

4.1 TRAINING MODE

MEPHISTO is operated via 8 keys; 6 function keys (black) and 2 input keys (red). The use of a 16x2 character 'dot matrix display' (the technical name for your display) and the use of a logical operation system make the limitation to only 8 keys possible.

Each of the 6 function keys activates a mode as follows:

Key:	Mode:	
- TRAIN	Training mode	Press the corresponding key to activate the mode and CL to de-activate.
- INFO	Information mode	
- MEM	Memory mode	
- POS	Position mode	
- LEV	Level mode	
- FCT	Function mode	

If you press one of the keys, the LED above it lights (red) and the mode is switched on. Note one exception: the POS key **seems** to switch the LED above the TRAIN key on. As you will read later, it is really telling you that it is showing the position of White's Pawns. Press CL to leave the mode.

- AUTOMATIC KEY RESPONSE -

MEPHISTO's keys work in a special way which is useful if you want to activate a function which would normally involve pressing the keys a lot of times.

If you hold down a key it will react as if you had let go and pressed again. Therefore to save pressing a key repeatedly, just hold it down. If you do this, for example with the TRAIN or LEV keys (after switching the computer on), you will see the display page through different items every second.

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4.1. TRAINING MODE

4.1.1. Looking at the opening book (width)

Switch the computer on and briefly press the TRAIN key (LED lights in red). MEPHISTO will then show you a part of its opening book. The top line of the LCD (display) shows a move for the player whose turn it is e.g. "E2E4", and the lower line shows three answering moves e.g. "E7E5 E7E6 C7C6". Although there may be more moves in MEPHISTO's memory only three replies are shown. If there are less replies in memory the computer will leave a space in the LCD.

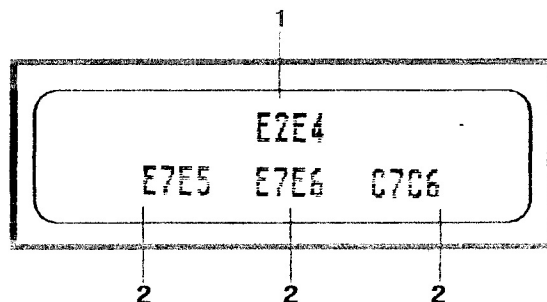
If you want to see another possible line of play, press the ENT key. MEPHISTO switches the display and now shows e.g. "D2D4" and "D7D5 G8F6 f7f5". Pressing ENT repeatedly (or holding the key down) calls up different lines finally returning to E2E4.

Note that some moves are written with capital letters, others with smallcap (e.g. C2C4 and g1f3). This is the way MEPHISTO distinguishes between **active** opening moves (**capitals**) and **passive** opening moves (**smallcap**). If the computer is allowed to start the game it will play the active moves in its memory (passive ones could lead the computer into a bad position for a machine).

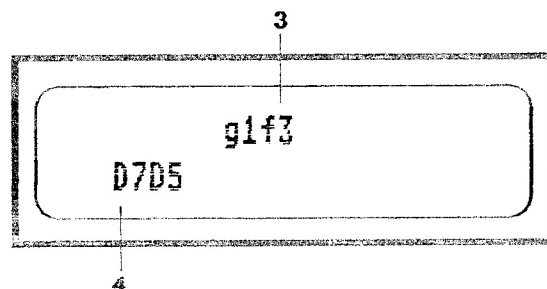
Press CL and the chess clock returns to the display as you leave the TRAIN mode. Using the TRAIN mode you can refer to the opening book even after having played a few moves in a game.

If you have played a lot of moves then pressing ENT may possibly not change the display, meaning that you have exhausted this part of the line in MEPHISTO's memory. If there are no more moves in the opening book the display will show "NO BOOK MOVE AVAILABLE". Then press CL to return to the clocks.

The following diagrams show what could be displayed:



- 1) Book move
- 2) Possible answering move



- 3) Passive opening move
- 4) Active opening move

4.1.2 Looking at the opening book (depth)

If you want to know to what 'depth' (number of moves) MEPHISTO has an opening stored, then proceed as follows;

(Switch MEPHISTO on)	
Press TRAIN once	(E2E4 is displayed in the top line)
	(replies are shown in lower line)
Make the move shown	(when the piece is put down the display jumps to E7E5 for Black)
Make the move shown	(when the piece is put down the display jumps to G1F3 for White)

.. and so on until the line comes to an end (MEPHISTO announces this with "NO BOOK MOVE AVAILABLE" in the display.

To continue to play against the computer from this position simply press CL (which you can do before the end of a line is reached of course).

4.1.3 Opening lines

Combining the functions mentioned in the previous two sections allows you to really use the computer's abilities.

Switch MEPHISTO on and press TRAIN. Either play E2E4 or press ENT to look at alternatives, and play one of these. After the display has changed to show replies you can press ENT to look at other moves possible. Play one of these and press ENT again. By repeating this you can investigate different opening lines. If the display doesn't change after you have pressed ENT then only a continuation is stored. If you have reached the end of the line the computer shows "NO BOOK MOVE AVAILABLE". Press CL to continue with a game from this position (can be done before reaching the end of a line).

- TRAIN AND BUILD UP YOUR OWN REPETOIRE -

Lets have a look at the **Spanish opening** to show you what can be done with MEPHISTO's opening book features.

Switch on the TRAIN mode.

Proceed as described in section 4.1.2 with the first moves of the Spanish opening:

1. e4, e5 2. Nf3, Nf6 3. Bb5

Next press INFO. The computer will confirm the opening in the lower line of the display.

The Spanish opening is basically divided into two groups:

- 1) the defence after 3. ... a6 and
- 2) games without the 3. ... a6 move.

As you can check yourself by pressing the ENT key, MEPHISTO has both lines in memory. The A6A7 move is **active** (the computer would

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play it, the notation is in capitals), whilst all the other moves are in smallcap and therefore **passive**.

Let's look at the passive moves first. Press ENT until the move concerned (below) is the display:

- 3. ... g8f6 - the Berlin defence
- 3. ... f8c5 - the Classical defence
- 3. ... c6d4 - this attack on the Bishop is named after its 'inventor', the Bird defence.
- 3. ... f5 - the Jänisch gambit
- 3. ... d6 - the Steinitz defence
- 3. ... g6 - with the Bishop's 'fianchetto'.

Before we go into these, let's go back to A6A7.

Make the move on the board. The move forces the Bishop back to a4 or to take c6. MEPHISTO has both possibilities in memory (press ENT to check).

Going back to the passive moves, starting with 4. b5c6+, you can see that White has a small advantage. The number of Pawns on White's Kingside would allow the possibility of a passed Pawn in an endgame, whereas Black would have a blocked Pawn on the Queenside. However, it's a long way to the endgame...

Make the active move B5A4 on the board. Amongst the passive moves stored in memory (ENT) you will find, apart from 4. ... B7B5, an active response 4. ... G8F6. Make this move on the board and then castle for White.

Press ENT and you will see that Black has two active responses to this commonly played line:

- 5. ... F6E4 - the Open Defence and
- 5. ... F8E7 - the Closed Defence.

At this point we would like to say that chess is not all about learning openings from heart. If you want to practise openings you now know how to do it. It is best to only stick to 5 or 8 moves when learning and refer to chess books on the subject when you want to get into the details.

4.1.4 Repetition of opening lines

If you have read an opening from MEPHISTO's memory you can call it up again. To do this press the TRAIN key instead of CL as previously. The display shows "BOOK-TRAINING ENT=yes".

Press ENT to confirm and the display shows "BOOK-TRAINING START OF GAME". Set up the pieces as at the start of a game and press the ENT key again.

The computer will now show you the line in the display and on the board. Make the move and press ENT again to see the reply. Make this move and press ENT again etc. You can do this until you reach the end of the line, when MEPHISTO will respond by showing "BOOK-TRAINING END OF GAME". If you want to practise again, press ENT again and set up the pieces in their starting positions. Continue as described above and you can train the line until you know it backwards!

4.1.5 Practising opening lines

Instead of keying in ENT from the starting position and looking at the line move for move, you can play the opening from memory (yours!). MEPHISTO will monitor your moves and see if you get them right.

Correct moves are rewarded with a bright beep, wrong ones denote with an error tone and the LED's of the piece just moved won't switch off. Try the move again until the computer confirms you got it right and continue.

Having reached the end of a line ("BOOK-TRAINING END OF GAME") press ENT to return to the start ("BOOK-TRAINING START OF GAME") to practise the line again.

Leave the mode with CL and continue from the position you have on the board if you like. To see whose turn it is, check the LED's on the far right of the keyboard.

4.2 Information mode

Press INFO (LED lights). The computer then shows information about the moves calculated for your interest and use.

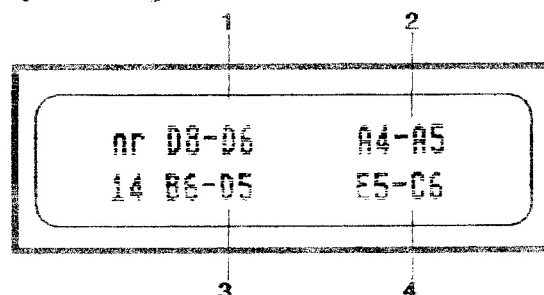
Note that the Information mode can be switched on even when the computer is thinking - in contrast to the other modes.

4.2.1 Info 1

If the computer has left its opening book and is in the middle of finding a move, then you can take a look at the move counter and **main line** by pressing the INFO key once. Up to 4 plys (half moves, or a move for White OR for Black) are shown in the LCD (look at the diagram below).

If you call up the main line when it is your turn to move then you can use the second move as a **move suggestion**.

Leave the mode by pressing CL.



- 1) First ply of the main line
- 2) Second ply of the main line
- 3) Third ply of the main line
- 4) Fourth ply of the main line

4.2.2 Info 2

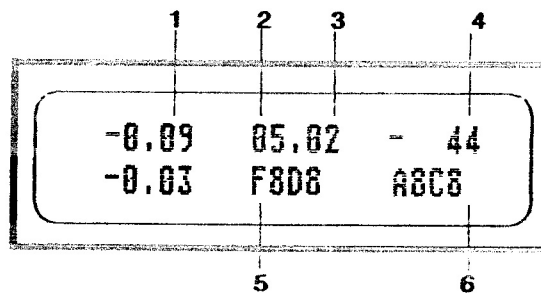
If the computer has left its opening book and is in the middle of finding a move, then you can take a look at the following by pressing INFO twice:

a) the **position evaluation** (measured in 'Pawn units') - a positive value means the computer is doing well, a negative value means its losing. "0.00" means its drawn or too soon in a game to say.

(The evaluation under the position evaluation is described in the section concerning the Chess Instructor).

- b) the **depth of analysis** reached in plys
- c) the **number and co-ordinates of the branch** being calculated
- d) the **number of possible branches**
- e) the **best move found so far**

The following diagram shows the corresponding display:



- 1) Position evaluation
- 2) Analysis depth
- 3) Present branch (number)
- 4) Number of possible branches
- 5) Present branch (co-ordinates)
- 6) Best move found so far

As you can see, some of these functions are for experts on the subject of chess-computing, and all are (as you will see) useful.

Leave the Information mode with CL.

4.2.3 Info 3

Pressing the INFO key three times during a game gives you **access to the computer's main line calculations.**

The upper display line shows the line calculated to a depth of three plys. Whilst the computer is just starting to look for a move the display will change very quickly. Then, when it gets down to the details of sorting out what it has found, the display will not change nearly as quickly (start a game with h2h3 and hit INFO three times to see what we mean).

The lower line of the display is reserved for another feature. If, whilst the computer is thinking, you actually make one of the moves the machine is thinking about, the lower line of the LCD

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will show the next three moves of the line developing from the move played. If it sounds complicated just try it using our a2a3 move from before. Note that MEPHISTO doesn't show the best move sequence, but one that it has already rejected. Taking the move back removes the second line from the LCD.

Really this function is only useful when you are playing on a higher level (see later section) as otherwise the computer will interrupt you to play its move before you can look for too long.

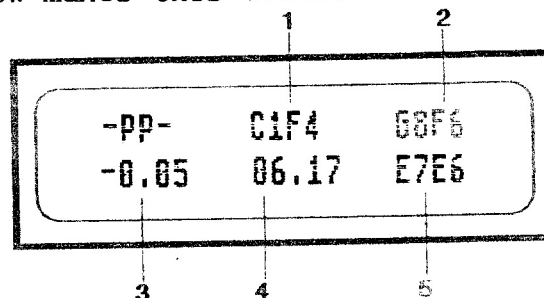
Leave the mode with CL as before.

4.2.4 Info 4

As you may already know, MEPHISTO (like a human) uses your thinking time to consider its own moves too. Information about these 'thoughts' (the feature is called 'permanent brain') can only be looked at when it is **your move**. If the computer has already calculated then it will show the following information if you press INFO four times (-PB- confirms 'permanent brain' in the upper lefthand part of the LCD):

- a) the **expected opponent's move**
- b) the **best move responding to this move**
- c) the **position evaluation**
- d) the **analysis depth**
- e) the **number and co-ordinates of the present branch**

The diagram below makes this clear:



- 1) Expected response
- 2) Best response to this move
- 3) Position evaluation
- 4) Analysis depth
- 5) Present branch (number and co-ordinates)

- CHESS INSTRUCTOR -

The chess instructor in your MEPHISTO evaluates the moves you make.

If possible, the computer will show the difference between the evaluation of your last move and that of the computer's main line

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in Pawn units (Info 2) and shows this below the position evaluation.

"0.00" means that the values are the same (you are playing what the computer thinks).

Values between "-0.30" and "+0.30" generally stand for 'playable' moves. Values lower than "-0.30" mean that the computer will have a better position. Values below "-0.90" mean that the computer believes it will shortly gain a piece.

Your MEPHISTO is the only commercial chess computer which can show this.

- AUTOMATIC INFORMATION -

If you call up information whilst the computer is thinking e.g. the position evaluation, then you are likely to be interrupted when MEPHISTO finds and plays its move.

When this happens, the move being played is in the LCD, and afterwards the clock is shown. However, after you have played **your next move, MEPHISTO will jump back to show the information as previously set.** This feature helps you when you want a certain display e.g. Chess Instructor display, shown throughout a game. You only need to set it once and then the computer will always show this whenever it is thinking.

4.3 Memory mode

Press the MEM key to activate the mode (LED lights red above the key). Now you will be able to record moves in the computer's memory (or recall them) without having to play a game against MEPHISTO.

The Memory mode can only be switched on when it is **your move**.

4.3.1 Storing move sequences, monitor function.

If you want to store a sequence of moves in MEPHISTO (from the starting position or any other position), then first press MEM once.

The upper line of the LCD shows "PLAYER-PLAYER". Make the moves (the computer will not start thinking) for both sides until you get to the position you want. If you now press CL you can carry on by making the next move for the side whose turn it is (don't forget to check the LED's for whose turn it is next).

You could also play an entire game against a human on the board and MEPHISTO will act as a judge, checking the legality of the moves, in the same as previously described.

4.3.2 Taking moves (or move sequences) back

MEPHISTO's memory allows it to take back any number of moves during or after a game. When it is your turn, press MEM twice. The top line of the LCD will then show "TAKE BACK". The lower line will show the move being taken back (also shown on the board). Take this move back on the board.

After you have replaced the piece the computer will sound a beep and the display will change to show the co-ordinates of the previous move. This move will also be shown on the board. Each time you take a move back the computer will switch to the previous move. In this way you can retract all the moves of a game ("START OF GAME" will then also be shown in the LCD).

If you take back a move in which a piece was captured, the LED of the square where the captured piece was standing will keep blinking. To remind you what piece was captured an LED will flash above the symbol for that piece on the keyboard. Replace the previously captured piece and the computer will show its last move. The MEM LED will light again when the captured piece is replaced.

To leave the Memory mode press CL. You can then continue the game against MEPHISTO from the position on the board.

- AUTOMATIC MOVE TAKEBACK FUNCTION -

Assume you have made a bad move, have noticed it immediately and want to take it back. First you have wait for the computer's move to be found (or press ENT), then make the move.

From here you have two possibilities:

- 1) you switch into the Memory mode (as described in 4.3.2) and take back the last two plys. OR
- 2) without activating the Memory mode, you simply play the moves in reverse, **on the board**. MEPHISTO's automatic takeback function recognizes what you are doing and registers each move with a single beep.

When taking back a lot of moves it is best to use the first method. The second method is quickest when you only have a few moves.

Another tip: this system also works in the training mode and therefore makes reading openings much easier, as the alternative moves can simply be made and then taken back.

4.3.3 Playing a move (sequence) forwards.

This works as in the previous section that whilst in the Memory mode. Moves which have been taken back can be played forwards again. Instead of pressing CL to leave the mode, press the MEM key again. The top line of the LCD changes to "MOVE FORWARD" and the lower line shows the last move taken back again. Make the move on the board.

As before, when you have made the move MEPHISTO will show which move is next. This can be repeated until all the moves in memory have been played through. At the end the LCD shows "END OF GAME".

Leave the mode with CL and continue the game from the position on the board.

- POSITION MEMORY FUNCTION -

If you want to interrupt a game for some reason but don't want to lose the last position in the game, press MEM (Memory mode) once **before switching off**. Then switch the computer off.

The last position reached is then stored in the computer and will be restored when you switch back on again. If you have had to remove the pieces for some reason then refer to section 4.4.1 to check the position of the pieces.

4.3.4 Replaying a game

You can return to the beginning of a game (e.g. for analysis or to alter the course of the game) during or after a game.

When it is your turn to move press the MEM key four times (or keep it depressed until "REPLAY GAME ? ENT=yes" appears in the display).

Confirm with ENT and set up the pieces in their original places. When you have done this, the computer shows "MOVE FORWARD" in the top line and shows the first move made in the lower line. Make the move on the board. When you have done this the computer will show you the next move (board LED's and LCD), and so on. This can be repeated until all the game has been replayed and "END OF GAME" is shown in the LCD.

Leave the Memory mode with CL and continue the game (if the King has not been mated!) with the side whose turn it is next.

4.5 Position mode

In the Position mode you can check and change positions on the board (e.g. for chess problems). The Position mode can only be activated when it is your move.









4.4.1 Checking positions

If you need to check the position on the board (pieces knocked over, checking a position - e.g. for a chess problem after you have entered it into the computer's memory), then the first thing you have to do is switch to the Position mode by pressing POS.

The LCD's top line shows "POSITION MODE" whilst the lower line shows the symbol for a white Pawn (see below). The LED over the Pawn key also lights, and the LED's on the board where White's Pawns are standing start flashing.

If you press another key e.g. for the Rook, the computer will show White's Rooks positions (symbol in the LCD too). If you press a key twice, then the computer will show the position of the same piece but for the other side. Pressing the key again switches sides once more, and so on.

When you want to leave the Position mode (CL) then you should note the following important point: when you press CL the computer leaves the position so that it is the turn of the side whose pieces were last being shown i.e. if you checked **Black's** Rooks last, then pressing CL will mean that you can resume the game **with Black** and vice versa for White.

	= PAWN	(TRAIN key)
	= KNIGHT	(INFO key)
	= BISHOP	(MEM key)
	= ROOK	(POS key)
	= QUEEN	(LEV key)
	= KING	(FCT key)
	= BLACK	(ENT key)
	= WHITE	(CL key)

4.4.2 Changing positions

Press POS to activate the Position mode ("POSITION MODE" is shown in the LCD top line, the symbol for White's Pawns in the lower line, the LED above the Pawn's key lights and the LED's on the board where White's Pawns are standing start flashing).

To tell the computer that you want to **alter** the position, press the ENT key. The Pawn key LED starts to **flash**.

You can now remove the white Pawns or re-position as you like (except on the back rank, where the Pawn would have to be promoted). You can also introduce new Pawns, as long as you don't then have more than 8.

Press the key for the piece concerned (once for White, twice for Black) and carry out the change. The last piece altered should be of the side whose turn it is to resume the game (White for White to move). Press CL to leave the mode.

Note that MEPHISTO checks the position on the board when you press CL. If the position is **illegal** e.g. 2 Kings, 9 Pawns, King in check and therefore captured with the next move, then it will sound a warning tone and show "POSITION MODE ILLEGAL". If possible it will light the LED's of the illegal piece on the board. Press CL and then ENT, then correct the position.

Having done this press CL again to resume the game with the side whose LED is lit on the keyboard.

- EXAMPLE OF POSITION ALTERATION -

Let's assume you want to play a game against the computer but want to give it a handicap i.e. a piece less than you. First **reset** the computer (**press ENT and CL together**). Then continue as follows:

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- 1) Press POS. The LCD shows "POSITION MODE" and the symbol for White's Pawns, the LED's of the Pawns on the board flash as does the keyboard LED for the Pawns and the LED for White (far right, CL).
- 2) Press ENT. The LED above the Pawn key flashes to confirm a desired alteration (the choice of piece follows).
- 3) Press the key for the piece to be moved e.g. the Knight (let's proceed to remove the black Knight on B8 to give MEPHISTO a handicap) - which is also the INFO key. The LED for the Knight flashes (still for WHITE).
- 4) Press the Knight key again (switches to Black's Knights).
- 5) You can now remove the black Knight on B8.
- 6) Press the key for the Knight once more (to set the colour whose turn it is after leaving the mode), returning to White.
- 7) Press CL and leave the Position mode.

The chess clock is back in the LCD and you can now start to play.

4.4.3 Setting up a position.

If you want to set up a new position on the board (for analysis or problem-solving) then first **remove all the pieces from the board**. Next press POS and then ENT. The upper LCD line shows "POSITION MODE", the lower line shows the symbol for White's Pawn. The LED above the Pawn key flashes.

Place the white Pawns you need on the board (you can change your mind and remove them or put them somewhere else if you haven't changed anything on the keyboard). For other pieces, press the piece key (twice to change the colour) and place them on the board in the same way. To reduce the number of times you press keys we suggest you first place all the white pieces, before pressing a piece key twice to change the colour, and placing all the black pieces.

When you have placed all the pieces you need on the board, press CL to leave the mode. Remember the colour of the last piece placed decides which side's turn it is.

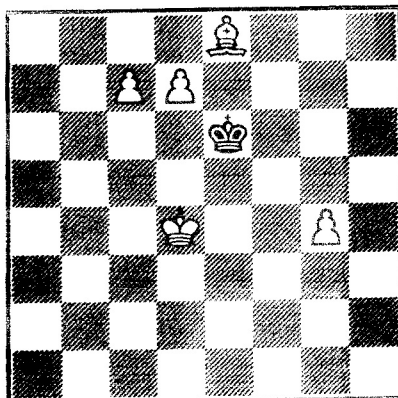
Make sure that the position you have set up is legal (max. 8 Pawns each, max. 2 Kings each, Kings not in check etc). MEPHISTO will check the position and beep and show "POSITION MODE ILLEGAL" if it is illegal, besides showing you the incorrect piece if possible. Press CL and then ENT before correcting the position and returning to the 'normal' mode with CL.

You can either then continue with a game from the new position or use this to solve a 'mate-in-...' problem (see section 4.5.6).

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- EXAMPLE FOR SETTING UP A POSITION -

Let's set up the following position for a mate-in-3-moves problem, which MEPHISTO is going to solve for you. Here's the position we need to set up:



Here's how to do it:

- 1) Remove all the pieces from the board and reset the computer (ENT + CL together).
- 2) Press POS and then ENT. The upper LCD line shows "POSITION MODE", the lower line the symbol for a white Pawn.
- 3) Place all the white Pawns on the board.
- 4) Press the key for the Bishop (the LCD changes to show "POSITION MODE" and the symbol for a white Bishop).
- 5) Place the white Bishop on the board.
- 6) Press the key for the King (LCD changes accordingly).
- 7) Place the white King on the board.
- 8) Press the King key again (the LCD still shows "POSITION MODE" but now also the symbol for a **black** King i.e. you have changed the colour of the piece being set).
- 9) Place the black King on the board.
- 10) Press the King key again (to change the colour back to white so it is White's turn to move when we leave the Position mode) and hit CL to leave the mode.
- 11) Now we want to tell MEPHISTO to solve the problem. This is actually covered in a section which follows, but it's learned quickly so let's go through it here. Press the LEV key repeatedly - or just hold it down - until "MATE IN 3 MOVES" appears in the LCD.
- 12) Press CL and then ENT.

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13) MEPHISTO solves the problem in about 3 seconds (!). Note that the computer wants to promote a Pawn into a Bishop !(look at the LCD). Whilst going through the solution, you have to make the moves on the board for both sides, **but actually play for Black**.

After you move the King the computer promotes another Pawn into a Rook before mating.

14) An interesting feature is being able to check for alternative mates. To do this press CL **instead** of making the first move of the solution as shown on the board.

If there is no alternative MEPHISTO will sound a beep and show "no MATE possible". Press ENT and the solution will be found again. Don't forget to search for mates **with White**. If you leave the position mode with the colour set to black the computer will announce "no MATE possible" as before!

4.5. Level mode

Press the LEV key to enter this mode which allows you to alter the style of MEPHISTO's play, its playing strength and its thinking time.

You can only activate this mode when it is your turn to move.

4.5.1 General information

When you switch on, or reset the computer (ENT + CL together), the normal playing level with an **average** of 10 seconds per move is automatically set. MEPHISTO however, offers you all the following alternative levels:

- (normal playing level)
- tournament level
- Blitz chess level
- search depth limitation level
- problem solving levels
- ELO points tournament
- ELO action chess
- analysis level

Apart from the analysis level, all of these can be freely set so that there are virtually unlimited playing levels.

Pressing LEV shows you the level presently set. Note that when you leave the Level mode with CL the computer automatically accepts the last level set and shown in the LCD.

4.5.2 Normal playing level

Whilst set to this level MEPHISTO plays with an **average** thinking time per move. When switched on or reset, the computer plays with an average of 10 seconds per move, which can be altered as follows:

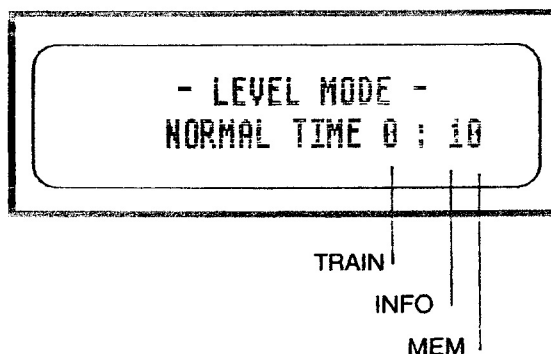
Press LEV (LCD shows "SPIELSTUFE and NORMAL 0:10"). Tell MEPHISTO you want to make a change by pressing ENT. The first digit of the time set is now flashing (in our case the '0' in front of the ':10') and is ready to be changed. Press the far left key TRAIN

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once to change the digit to 1, twice to change it to 2 etc. (after 9 it returns to 0). Press the INFO key to change the second digit in the display and press the MEM key to change the third digit. Trying this out is simpler than explaining it.

Every setting from 0 seconds to 9 minutes and 59 seconds is possible. When you have finished, press CL and MEPHISTO will accept the setting and stop flashing the LCD.

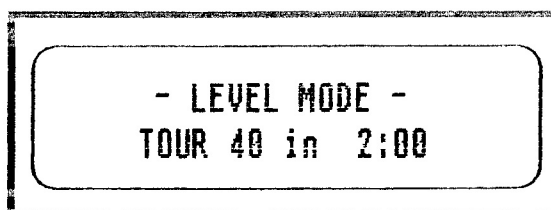
If you have made a mistake, press ENT and correct the error, otherwise press CL to leave the mode.



4.5.3 Tournament game level

In the tournament game level you can set a number of moves to be played within a particular time limit e.g. 40 moves in 2 hours).

If you want to play against MEPHISTO with the normal tournament timing of 40 moves in 2 hours, then first press LEV, and then LEV again. The setting is shown in the LCD.



All you have to do now is leave the mode with CL and MEPHISTO has accepted (it always takes the last setting shown in the LCD before leaving the mode with CL).

If you want to (re)set the number of moves or the time control then proceed as follows:

Press ENT to indicate a desired change (LCD flashes on number of moves 'digit 1'). Alter this digit with TRAIN, and the next with INFO (settings between 01 and 99 possible). Confirm your setting with CL (LCD flashes 'digit 1' of the time control, which is the next alteration to be made).

Press TRAIN, INFO and MEM to alter the time control (settings between 0:01 and 9:59 are allowed) and confirm your choice with CL

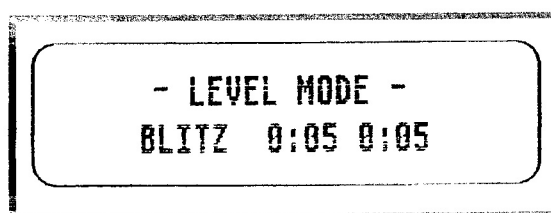
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At this point you can go back to alter a setting with ENT, else leave the mode with another CL. During the game the setting is shown on the far left of the LCD, next to the clocks.

4.5.4 Blitz chess level

In this level you can decide on the total time for a game. You can even set different times for the players so that MEPHISTO has a handicap with less time than yourself.

If you want to play a Blitz (or action) chess game against MEPHISTO then first press the LEV key three times until "LEVEL MODE" appears in the LCD. The lower LCD line shows "BLITZ 0:05 0:05". If you are happy with this setting (5 minutes per side) then merely press CL and leave the mode.



If you want to change the setting then first press ENT, confirming that you want to make a change, and the LCD will blink the first number of the **player's** setting (on the left). You can alter this digit (hours) with the TRAIN key. The next digit can be altered with the INFO key (minutes) and the last digit (seconds) can be changed with the MEM key. Each time you press the key, the digit is increased. When the maximum setting is exceeded, the digit starts again from 0 (try this out to see how simple it is). Having set the players time, press CL and the computer will switch to allow you to set the time for MEPHISTO in the same way as before. To confirm both settings press CL, alternatively press ENT to go back and reset both times. Leave the mode with CL again.

Note: the possible setting range from 0:01 to 9:59.

- CHESS CLOCK 2 -

When set to either the tournament, ELO-tournament, ELO action chess or Blitzchess levels, the chess clock shows the **remaining times** for the players i.e. counts down the time (countdown mode) to zero.

When the tournament level is set the clock also shows the number of the move at which the next time check is made. The following diagram explains this:

1	2	
40	00:53	02:21
17	01:09	03:34
3	4	

- 1) Time check move (here - move number 40)
- 2) Total time left for the computer
- 3) Number of moves played in the game
- 4) Total time left for the player

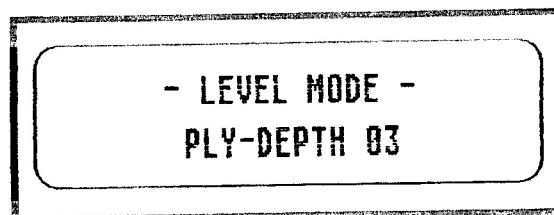
In the example above 17 moves have been played so far. The time check is at the 40th move, meaning that the player's remaining 23 moves have to be played in 1 hour and 23 minutes.

Should either the player or the computer exceed the time allowed, the computer's LCD shows "TIME CONTROL YOU (I) LOSE" and the responsible side has lost the game.

4.5.5 Analysis depth level

In this level the computer's maximum allowed analysis depth in plys is set. By limiting this, you limit MEPHISTO's chances of peering into a position's possibilities too far, which means you limit the computer's playing strength (without having to give it a direct handicap such as a piece less).

Press the LEV key four times. The LCD shows "LEVEL MODE" and "PLY-DEPTH 03". If you want to limit MEPHISTO to a move search depth of 3 plys, press CL to confirm before carrying on.



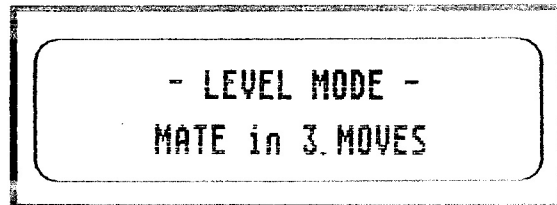
To alter the search depth, press ENT first. The computer will flash the first digit, showing it is ready to alter this. Use the TRAIN key to alter this (runs through 0 to 9 and back to 0 again) and the INFO key to alter the second digit. The settings can be set from 01 to 99 in the display, however the computer's maximum search depth is 16 (!) plys. Every setting over 16 is therefore accepted as 16 as this is the maximum.

Press CL to continue, check the times and if alright, press CL again, alternatively ENT to go back and reset the times.

4.5.6 Problem-solving levels

These levels are exclusively for **solving chess problems**. MEPHISTO therefore doesn't search for moves in the same way as during a normal game, but concentrates on finding the quickest checkmate combination. We have already been through an example on a previous page.

First set up the position on the board as previously described in section 4.4.3. Next press the LEV key five times (or hold it down until "LEVEL MODE" and "MATE in 3 MOVES" appear in the LCD).



If the problem you are going to solve is a mate-in-3-moves problem then all you have to do is press CL to confirm your choice and to leave the mode simultaneously.

If your problem has another number of moves (maximum 8!) then press ENT to tell MEPHISTO you want to change the setting shown and the LCD will flash the present setting (in our case the 3).

Next press the TRAIN key to increase the setting by 1 until you reach the number you need (after 8, the computer goes back to 1) and then press CL. The number stops flashing and if it is correct you can press CL again, alternatively press ENT to go back and alter.

To start the search for the solution press the ENT key (but make sure that it is White's turn to play first by checking which of the LED's above the ENT and CL keys is lit). Don't forget that MEPHISTO only solves problems for White.

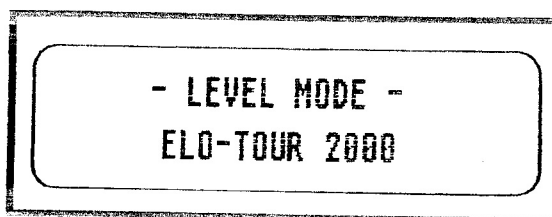
Important: note that problem chess is particularly difficult for chess-computers and that they may not always solve every single problem given to it. You can be assured however, that your MEPHISTO academy is an excellent problem-solver and it will probably not happen that it will not find a solution, although the time needed for solving may be longer than you sometimes thought.

4.5.7 ELO tournament level

This is one of MEPHISTO's unique features. With this level you can set the approximate ELO strength that you want MEPHISTO to play against you with at the tournament level of 40 moves in 2 hours. As in a game with a human opponent, the MEPHISTO now won't show you it's intended moves, it's evaluation of the position etc. This is what you need to train for human opponents of a set playing strength.

Press and hold the LEV key until the LCD shows "LEVEL MODE" and "ELO-TOUR 2000" (then let go of the key !!). If you want to

play against MEPHISTO set at 2000 ELO points then press CL to confirm and you can start.



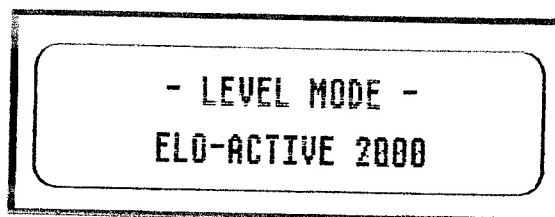
If you want to change the setting, press ENT to announce an alteration (the first digit starts blinking), then use the TRAIN, INFO, MEM and POS keys (each corresponds to a digit in the LCD) to alter the setting. The possible settings in the LCD range from 0000 to 9999, however MEPHISTO is programmed to accept a minimum of 1000 (value settings below this are 1000) and a maximum of 2000 ELO (value setting over 2000 are accepted as 2000).

Press CL to stop the flashing and check your setting. If alright, press CL else press ENT to go back and reset. The clock shown in the LCD is that described in the section 'Chess clock 2' above.

4.5.8 ELO active chess (speed chess) level

This is the same as the previous section 4.5.7 except that the computer now plays at the active (action, rapid or quick) chess level timing of 30 minutes for the whole game. As before, it is not possible to obtain the position evaluation, intended moves etc.

To set this level, press and hold the LEV key until the LCD shows "LEVEL MODE" and "ELO-ACTIVE 2000".



If you are happy with a strength of ELO 2000 for the game then press CL. If you want to change the level, first press ENT. Then use the TRAIN, INFO, MEM and POS keys to alter the setting. Press CL to finish the setting, check the setting (ENT allows you to go back and correct) and CL again to leave the Level mode.

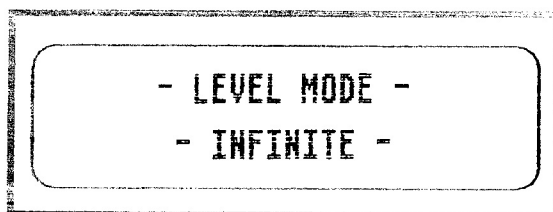
The chess clock shown is set to the countdown mode as previously described.

4.5.9 Analysis level

If you want to take a longer time to let MEPHISTO analyse a position for you then this is the level to do it with. The computer will then think out moves until you press the ENT key (it then plays the move on the board) or until its memory space is full (can take several days!). This is a useful level if you

like to play correspondance chess and would like a second opinion.

Press and hold the LEV key until the LCD shows "LEVEL MODE" and "INFINITE".



Next press CL to confirm your choice and ENT to start the analysis

4.6. Functions mode

You can activate this mode (when it is your turn) to obtain access to a number of MEPHISTO's special functions. Press the FCT key (LED above it lights).

The following special functions are now available to you and are pre-programmed set on or off (or to a set level) as shown below:

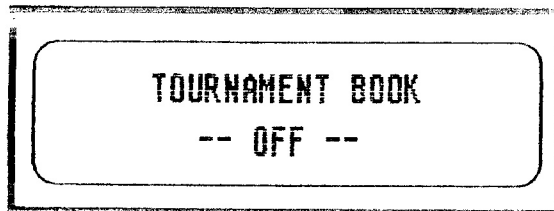
Special function:	Preset:	Access by pressing FCT ... times
- tournament openings limitation	off	x1
- opening book	on	x2
- turn the board function	off	x3
- beep tone	on	x4
- permanent brain	on	x5
- random move generator	off	x6
- selective analysis depth	3	x7
- learn factor	0	x8
- ELO calculation	0000	x9

These functions are described in the following sections.

To alter the setting of a function, first call it up by pressing the FCT key repeatedly (alternatively hold and release when shown in the LCD). To change the preset state shown in the LCD, press the ENT key. The setting then **toggles between ON and OFF each time you press the ENT key**. To confirm the setting, press CL.

4.6.1 Tournament openings limitation

This function limits the openings used by MEPHISTO to those which it can play best. When set to play at a tournament level, the openings are automatically switched on and accessible to MEPHISTO. If you want to let MEPHISTO use them whilst set to another level then switch the function ON as described above.



4.6.2 Opening book

When set OFF the entire opening book is no longer available to MEPHISTO. This means that it will have to start to search for moves right from the beginning of a game. This may slow the computer down a little and may make it play different openings to those which are stored in its opening book (chess theory book). Use this function to add variety to opening games.

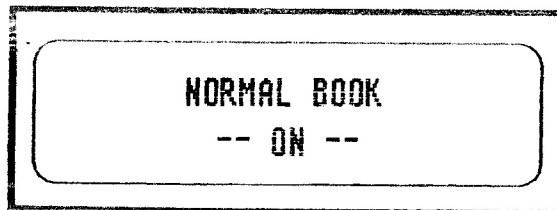


BILD 23

4.6.3 Turn the board function

There may well come a time when you would like to change sides and play with Black against MEPHISTO. If it doesn't bother you to have the White pieces in front of you and to have to play 'towards yourself' then just press ENT to make MEPHISTO play the first move.

Note: pressing the ENT key will always make MEPHISTO play a move for the side whose turn it is. To make MEPHISTO play a game against itself just keep pressing ENT for every move.

If you would prefer to play with Black but with the black pieces at the bottom (keyboard) end of the computer (i.e. in front of you) then you have to switch the turn the board function ON.

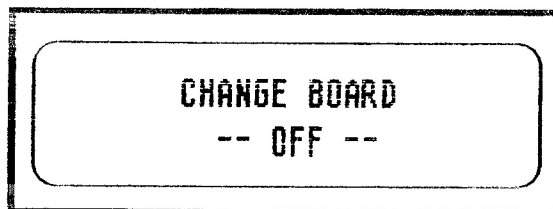
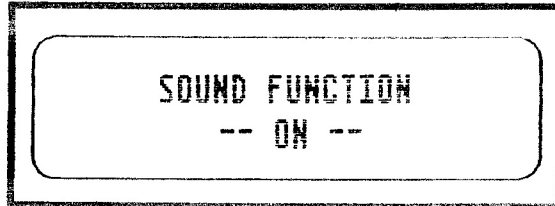


BILD 24

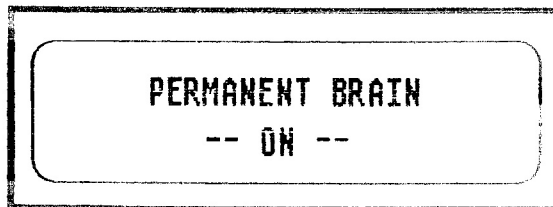
4.6.4 Beep tone

A useful function for those secret games at midnight when you're supposed to be asleep, don't want to wake the kids etc. Switching the tone function OFF means that you can play in silence.



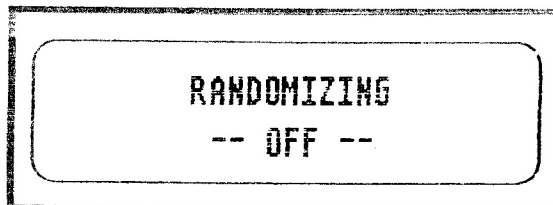
4.6.5 Permanent brain

Your MEPHISTO uses the time you take to play a move to look at its own possibilities. This 'human' characteristic is called 'permanent brain' when talking about chess computers. Switching the function OFF means that MEPHISTO will play weaker as it will have less time to find moves in.



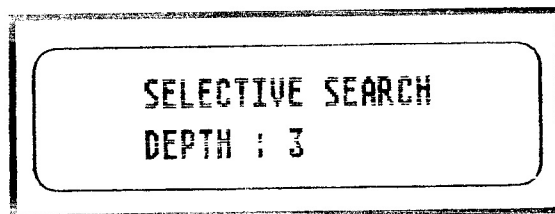
4.6.6 Random move generator

Normally MEPHISTO plays the best move it can find (that is normal, isn't it?). By switching this function ON you cause MEPHISTO to play a random move of the best ones it can find which are similarly evaluated. MEPHISTO therefore doesn't definitely play the best move, but one of the best moves.



4.6.7 Selective analysis depth

MEPHISTO looks at all the possible moves up to a particular search depth and then carries on using a selective method. It does this because the number of possible moves soon becomes impossible to count, let alone analyse. If you want to alter the depth to which MEPHISTO searches by 'brute force' (looking at all the possibilities) you must first call up the function as described above.

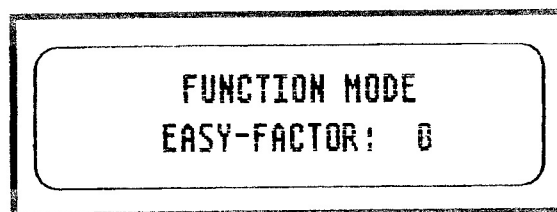


The diagram above shows the LCD report. Next press ENT (digit in the LCD flashes) and then use the TRAIN key to alter. Press CL, and if the setting is correct CL again to leave the mode, else ENT to go back and correct. Settings between 0 and 8 are allowed.

The lower the value of the setting (start of selective search method) the less tactical moves the computer will overlook. However as it now has to examine a vast number of possible moves, it will play slower, but shouldn't overlook any nasty tricks you have laid in ambush for it.

4.6.8 Learn factor

This is another possible method to reduce MEPHISTO's playing ability if you have the feeling it's far too strong for you. The higher the learn factor, the weaker the computer will play, i.e. at factor 8 (maximum) combined with the analysis depth limitation at a setting of 1, MEPHISTO is set to play at its weakest. You can set the learn factor in exactly the same way as described in the previous section 'Selective analysis depth'.

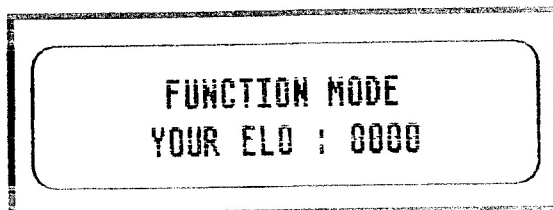


4.6.9 ELO calculation

It is exciting to be able to monitor your progress when training. As your MEPHISTO has the official formula from the International Chess Federation (FIDE) stored in its memory, it can rate your last game against the computer in ELO (maximum 2400 ELO) and show this to you - something unique in the world of chess-computers!

MEPHISTO ACADEMY

To find out your new ELO rating first call up the special function as described at the beginning of the chapter. The following is shown in the LCD:



Next you have to press ENT to tell MEPHISTO that you want to enter your last ELO rating (if this is the first time, then you can start with a rating of e.g. 1500). Then use the TRAIN, INFO, MEM and POS keys to alter the digits in the display for your ELO rating. Settings between 0000 and 9999 can be written in the display, but don't forget the maximum of ELO 2400.

Having typed in your rating, press CL and continue by typing in the rating of your opponent in the same way as before - maximum ELO 2400 (note that you can use this function for calculating your new rating after a game at the local chess club too!) and finish by pressing CL again.

Now the computer shows you "FUNCTION MODE RESULT:" and "+" in the LCD. MEPHISTO is asking for the result of the game as follows:

- + means game won by first player
- = means game drawn
- means game lost by first player

To change the result from the + being flashed press the TRAIN key until the correct symbol appears. Finally press CL the the display immediately jumps to show you "ELO (NEW) : " and then your new rating. Using CL you can leave the mode.

Your MEPHISTO is the first commercial chess-computer which has this feature!

4.7 The keyboard

4.7.1 The ENT key

The ENT key forces MEPHISTO to play the next move (if you think it is taking too long or if you want to see what the computer would play next). Please remember that the key also allows you to switch various special functions on and off and therefore has a multiple function.

4.7.2 The CL key

The CL key is also a multiple function key. When leaving a mode the key also confirms the last setting shown in the display. Pressing CL whilst the computer is still in the opening book shows you a limited number of alternative moves (if you don't make the move already being shown).

MEPHISTO ACADEMY

4.7.3 Reset - a new game

Pressing the ENT and CL keys together resets all MEPHISTO's settings (playing level, tone switched off etc), ready for a new game. This is the more elegant method of starting again, rather than pulling the plug or switching MEPHISTO off and back on again. We recommend this method if you want to let your computer live to a very ripe old age.

- WHO WROTE THE PROGRAM? -

Your MEPHISTO academy program was written by Ed Schröder (from the Netherlands) who is almost definitely the World's best chess computer programmer for 8-bit systems. Having worked for large dutch companies, Ed Schröder appeared in the chess-computing World in 1980, after buying a chess-computer and discovering that he could write a better program himself.

His first machine code program won third place at the Dutch Championships - an amazing feat for a newcomer to the scene!

As Ed Schröder's programs improved and rapidly gained playing strength, he signed a contract with Hegener + Glaser AG and has since gone on to produce such distinguished programs as 'MEPHISTO Rebell 5.0', 'MEPHISTO MMIV' and the MEPHISTO 'SUPERMONDIAL II'.

Amongst Ed Schröder's successes are the Dutch National Championship, a World Championship title and a large number of victories against various million-dollar mainframe computers. Ed has also achieved his original goal- to write a chess program which he can't beat himself (except on rare occasions).

We are proud to be able to place Ed Schröder's undoubtedly most versatile and well-thought-out chess program at your disposal, the MEPHISTO academy.

MEPHISTO ACADEMY

4.8 Technical data

Microprocessor:	65C02
Memory size:	48KBytes ROM 8KBytes RAM
Clock speed:	4.9152 MHz
Program:	Mixed Brute force and Selective
Playing levels:	Normal games Tournament Blitz Analysis depth Problem solving ELO tournament ELO active chess Analysis (correspondance chess)
Clocks:	4 clocks Countdown mode
Display:	16x2 Dot Matrix LCD
Monitoring of:	Main line Position evaluation Analysis depth Move counter Permanent brain Line calculation
Takeback limit:	255 Plys

This instruction manual comprises the closest description of the MEPHISTO academy chess-computer at the time of printing and does not guarantee certain functions or successes in chess events. The product, including all peripheral equipment, is subject to alteration without prior warning if technical reasons and progress make this necessary.

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